is nearly always acid) or alcohol plus a small amount of acid, acetic usually being used, the granules were very conspicuous. The author further considers the standpoint of physiological chemistry, which teaches that the reaction of living nervous tissue is alkaline, but that almost immediately after death the reaction becomes acid, sometimes within a few minutes. This development of acid is, in the author's mind, the cause of the formation of the Nissl chromophylic bodies.

The paper further considers the erudite questions of the structure of protoplasm, the nerve cells in particular being the ground debated upon. Held is inclined to adopt the reticulum theory, somewhat modified from the original Fromann point of view, and rejects the filar theory of Fleming. The article is one that cannot be omitted from the range of the neurologist's reading if he is interested in the problems of structure and the interpretation of microscopical pictures.

JELLIFFE.

57. UEBER VARIATIONEN IM VERLAUFE DER PYRAMIDENBAHN (On Variations in the Course of the Pyramidal Tract). A. Hoche (Neurolog. Centralblatt, 16, 1897, No. 21).

The author contributes to this subject the anatomical findings in a case of glio-sarcoma, situated in the central convolutions, causing descending degeneration, in the pyramidal tract; the course of the latter was found to vary from that usually observed. Examination by Marchi's method showed that in the peduncle, pons and medulla the region of the left pyramid was exclusively degenerated.

The decussation occurred at the normal level, but a portion of the fibres passed down into the opposite anterior tract.

This decussated anterior tract extended throughout the entire cervical region of the cord, and disappeared at the level of the first dorsal root.

Another unusual occurrence was the extension forward of the area of degeneration beyond the ordinary region of the lateral pyramidal tract, which normally does not reach beyond a line drawn through the lateral horns.

At the II. cervical in Gower's tract a bundle was observed, which showed itself throughout the cervical cord as an irregular figure.

Throughout the dorsal cord the crossed pyramidal tract extended also too far forward, and even in the lumbar region the pyramidal area was greater than usual.

The direct pyramidal tract showed a hook-like formation as low down as the dorsal region.

MEIROWITZ.

58. ON THE ENDOGENOUS OR INTRINSIC FIBRES IN THE LUMBO-SACRAL REGION OF THE CORD. A. Bruce (Brain, 20, 1897, p. 261).

The author discusses the fibres found in the posterior columns of the cord in the lumbo-sacral region, termed by Marie the endogenous fibres. These fibres form two very well-marked tracts, one lying in the anterior part of the posterior column, in close opposition to the posterior cornu, commissure and septum; the second in immediate relationship to the posterior median septum, and in part to the posterior surface of the cord. The first tract, the *cornu-commissural tract* (Hinterstrangsfeld); the second, termed by the author the *septo-marginal tract*, "Edinger's medianisches Hinterstrangsfeld."

These fibres do not degenerate upward according to the author, being spared in locomotor ataxia; but they do suffer degeneration in conditions which induce degeneration in the cells of the posterior horns.

1.) The *cornu-commissural tract* extends through the whole of the lumbo-sacral region, being traceable from the lowest dorsal segments to the extreme tip of the conus medullaris. At the level of the lower lumbar region it attains its greatest size, and diminishes above and below this level. It lies throughout in close relation to the posterior commissure and, in the main, to the anterior part of the inner margin of the posterior horns. Posteriorly the tract has no definite margin. Its outer portion merges gradually into the part of the column behind it, Flechsig's middle root zone. The fibres which compose it can be seen entering it from the gray matter of the posterior cornu, and almost exclusively from that of the same side.

2.) The *septo-marginal tract* forms a racquet-shaped area or triangle, two of its sides being applied to the posterior median septum and to the periphery, respectively, and the third forming a somewhat indefinite margin between the degenerated and undegenerated parts of the cord, the anterior angle seemingly extending anteriorly to the cornu-commissural tract.

With reference to its origin, the evidence is still insufficient; the tract originates in part in the higher segments of the cord, gains greatly in bulk about the level of the first sacral segment, and terminates in the lower sacral and the coccygeal region, by sending fibres along the posterior median septum into the gray matter near the central canal, where they are lost among the other fibres in this part.

The author believes that in some parts of its path this is the same as Flechsig's "oval field." The tract is mainly descending, but Spiller and Dejerine have shown it to contain some ascending fibres.

Their function is undecided, but the evidence seems to point to their being connected with the lower organic reflexes. The paper is well illustrated and contains a partial bibliography. VOGEL.

59. ZUR LEHREVON DEN SECUNDÄREN DEGENERATIONEN IM RÜCKENMARKE (Secondary Degenerations in the Spinal Cord). By Dr. B. Worotynski (Neurolog. Centralblatt, 16, 1897, No. 23).

Experiments were made upon dogs, in which total and hemilateral sections of the cord at different levels were practiced. In all, 18 experiments were performed, the animals surviving from 1 to 127 days. The author's results are summarized as follows:

1. Secondary degeneration of the individual systems in the spinal cord of dogs does not develop synchronously; the fibres of the posterior columns of Löwenthal's bundle degenerate first; then those of the direct cerebellar and of the antero-lateral tracts; finally, the fibres of the pyramidal tracts. In the human brain the same order seems to be followed.

2. Degenerative processes, once begun, develop rapidly, almost simultaneously throughout the entire extent of the tract.

3. In the columns of Goll and Löwenthal the degenerative process attains its maximum severity, which may be observed by the methods of Marchi, in the course of the second week following section of the cord; in the direct cerebellar and antero-lateral bundles, in the course of the third week; in the lateral pyramidal tracts it is still possible at the end of the fourth week to observe a general intensification of the degenerative process.

4. With Weigert's method the secondary degenerations, even three weeks after section of dog's cord, are hardly to be seen.

5. The order in which the secondary degenerations of the different columns show themselves corresponds approximately to that in which the systems receive their sheaths during development.

6. Kahler's law on the arrangement of the root fibres in the posterior columns can be accepted absolutely. The same law holds good with reference to the human brain.